CHAPTER 6

Fueling the Corps Force

The corps force can move only as long as vehicles and aircaft receive fuel. While METT-T factors affect daily fuel consumption, the COSCOM may need to supply up to 600,000-gallons of fuel per day in support of a heavy division and its supporting corps units. Nondivision elements in the division sector may require an additional 80,000-gallons each day. COSCOM petroleum supply units and DS supply units need to stock sufficient fuel throughout dispersed Class III points. In order that fuel not become a war stopper, the supporting transportation distribution system needs to provide rapid distribution of fuel.

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PLANNING FUEL SUPPORT

To support the movement and momentum of initial clashes, the COSCOM pushes fuel forward and deep from the outset of battle. COSCOM petroleum support branch staff officers preplan bulk fuel resupply through D +10. Plans need to include the uninterrupted flow of fuel to joint or combined operational forces. The COSCOM support operations officer ensures that the corps' Class III bulk distribution plan agrees with the theater army inland distribution plan for bulk fuel.

CSS PLANS BRANCH

CSS plans branch personnel, assigned to the COSCOM support operations section, ensure that fuel support annexes conform with OPLANs. They coordinate with petroleum support branch personnel in preplanning ways in which to redistribute or shift the flow of bulk fuel to support a main thrust. They coordinate with staff assigned to the other branches of the support operations section in determining the best way to synchronize resources. They prepare the support operations estimate and annex to COSCOM OPLANs/OPORDs. In planning fuel support, they need to consider the –

- Mission, size, and composition of the force to be supported.
- Corps commander's intent.
- Battlefield terrain.
- Fuel distribution resources available.
- Amount and type of fuel to be distributed (requirements of the force).
- Fuel distribution system or method (transportation mode).
- Petroleum supply or DS supply units required to operate the system.
- Special seasonal requirements, such as antifreeze, fuel additives, and oil weight.

PETROLEUM SUPPORT BRANCH

Petroleum support branch personnel, assigned to the COSCOM support operations section, oversee petroleum support planning. They develop plans and policies for petroleum management by CMMC petroleum/water division staff. They develop plans, policies, and procedures involving the receipt, storage, and distribution of bulk fuels. They also –

- Assess petroleum requirements and consumption factors and recommend changes to storage requirements and delivery schedules.
- Make recommendations for the troop basis and modification of petroleum supply unit MTOEs.
- Provide input to the force design/plans branch for petroleum support of contingency operations.
- Project fuel requirements by type of fuel based on the quantity of fuel-consuming equipment and vehicles.
- Coordinate with CMMC petroleum/water division staff on criteria and processing procedures for emergency requirements.
- Establish policies on quality surveillance.

- Establish procedures for collecting and reporting petroleum management information.
- Coordinate with the transportation support branch, CMMC, and CMCC to identify Class III movement requirements as part of movement programming.

Time, space, distance, terrain, existing resources, scope of requirements, and operating environment also need to be considered. More specifically, petroleum support branch personnel need to consider the –

- Number and types of fuel-consuming equipment and vehicles that use MOGAS, diesel, and aviation fuel.
- Availability and capability of subordinate units to provide the required support.
- Number and location of Class III points, to include throughput distribution.
- Distribution means (tank and pump unit, pipeline equipment, hoseline, rail, barge, or tank truck).
- Type of terrain and distance between units.

LOGISTICS PREPARATION OF THE BATTLEFIELD

COSCOM petroleum support branch personnel coordinate with COSCOM ACofS, G2 and G3 staff on collecting and assessing data which impact on planning fuel support operations. They identify priority intelligence requirements.

During initial planning stages, knowledge of the AO and threat capabilities helps petroleum officers project petroleum requirements and plan efficient fuel support operations. Petroleum support branch personnel can find the following information from IPB products:

- Types of industrial fuel resources in the rear area.
- Area port facilities and discharge capacities.
- Bulk fuel storage and pipeline locations.
- Highway and rail networks and capacities (verified by the transportation support branch or CMCC).
- Threat weapon systems ranges.
- Location of threat fuel resources.
- Threat air and ground named areas of interests.

Petroleum officers use IPB battlefield area evaluation products on the operations area and friendly and enemy forces to recommend the number and placement of DS supply units and petroleum supply units on time phased deployment lists. IPB products on enemy capabilities, composition, weaponry, and how the enemy might fight help petroleum officers preplan the type and quantity of bulk fuels and packaged products required to support initial operations. They also help them plan ways to protect Class III points and distribution systems.

CSSCS REPORTS

Petroleum support branch personnel plan fuel support for operations 48 to 72 hours in the future. CSSCS software provides Class III asset status displays on bulk and packaged Class III within the corps area. CSSCS status reports list the quantity or days of supply available in Class III supply points and individual units. CSSCS tracks MOGAS, DF, and aviation fuel assets. It reports on other petroleum assets only if they appear on the CSSCS tracked items list. Class III packaged asset data flows into CSSCS through its interface with SARSS-1.

Petroleum support branch personnel use CSSCS force echelon display forms to assess the current and projected availability of Class III assets for the corps force.. They use asset displays to evaluate Class III storage and distribution requirements against capabilities of units to support shifts in tactical operations. They can view a display of a particular unit to assess unique situations. CSG petroleum personnel use supply point displays to view unique situations at a particular supply point. Based on projected asset information from Class III points, they coordinate with the MCT for extra transport capability.

FUEL CONSUMPTION FACTORS

COSCOM petroleum officers use fuel consumption factors in FM 101-10-1/2 and SB 710-2 to develop plans for supporting corps forces. For NATO operations, STANAG 2115 provides factor percentages used to adjust fuel consumption estimates to the type of combat, terrain, and climate expected in the AO. Petroleum staff officers use fuel consumption factors to help determine the number and type of fuel distribution equipment needed.

FUEL FORECASTS

The COSCOM pushes bulk fuel forward in response to forecasted requirements. Forecasts vary, depending upon the probable level of activity. S4 personnel forecast requirements based on ullage and fuel consumption data for periods of similar level activity and operations.

The COSCOM support operations officer, in coordination with the CMMC's petroleum and water division staff, modifies fuel forecasts based upon GS stock status, corps commander priorities of support, and the tactical situation. The CMMC petroleum and water division keeps the support operations officer informed of forecasted work loads.

NBC PLANNING CONSIDERATIONS

Supported units set up in great depth and across wide fronts. Requirements for increased dispersion of forces, increased movement of maneuver units, and stock losses result in increased fuel requirements. To ensure availability of adequate fuel support, the bulk fuel supply system needs some redundancy. Bulk fuel storage sites must be dispersed and camouflaged to avoid presenting a lucrative target.

Effects from NBC Attacks

Flying debris may puncture collapsible bags at Class III points. The pressure created by a blast can destroy fabric tanks. Heat resulting from a nuclear explosion causes secondary explosions on contact with vapors or flammable surfaces. Induced radiation from a nuclear explosion causes induced radiation in fuel system supply point equipment.

Impact on Throughput Distribution

Resumption of throughput shipments depends upon the disruption of road networks and combat losses of tanker trucks. Whenever possible, resupply needs to occur at night, using rendevous techniques.

Petroleum support branch personnel and CSS plans branch personnel need to plan for interruptions in LOCs and combat loss of petroleum tankers. The COSCOM compensates for these interruptions and combat losses through tankers held in reserve for automatic resupply or throughput of bulk fuels from TA.

COSCOM FUEL ORGANIZATION

The COSCOM's fuel organization depends upon the type and level of conflict, type and size of supported forces and their missions, existence of HN petroleum assets, and estimated length of the operation. It also depends upon the corps reserve policy, availability of bulk fuels in underdeveloped theaters, and the requirement for petroleum quality surveillance. Allocation of habitually supporting medium truck companies (petroleum) depends on the corps commander's priorities, road conditions, and throughput distances.

FUEL SUPPORT ORGANIZATION

Figure 6-1 depicts the COSCOM's bulk fuel organization. The organization provides both DS level fuel support to nondivision units on an area basis and corpswide GS level bulk fuel support of the corps' divisions, separate brigades, and ACRs. The fuel organization consists of –

- Quartermaster supply companies, DS.
- Petroleum supply company, GS.
- Medium truck companies (petroleum).
- Petroleum product laboratory (mobile).
- Petroleum supply cellular logistics team, if applicable.
- Petroleum pipeline and terminal operating company, if attached from EAC.

Quartermaster Supply Companies, DS

The COSCOM assigns DS supply companies (TOE 42447L000) to CSGs to provide DS level bulk fuel and packaged products to nondivision units. These companies provide mobile falling station support for units in the area. They establish refuel-on-the-move sites for convoys passing through their area of responsibility or set up fuel stations at assembly areas for assault vehicles.

Forward CSGs normally employ a DS supply company in the division area to provide support to nondivision units operating in the division sector. The DS supply company may also provide reinforcing support to FSBs and MSB to enable them to provide support to corps forces employing in the brigade or division area.

Petroleum Supply Company, GS

Petroleum supply companies, GS, provide corpstide GS level bulk fuel support to nondivision DS supply companies, DISCOM MSBs/FSBs, separate brigade support battalions, and ACR support squadrons. These companies also maintain a prescribed portion of the corps' petroleum reserve. Normally, a petroleum supply company cannot support more than one division slice of the corps. However, the size of the corps reserve affects actual allocation.

Medium Truck Companies (Petroleum)

These companies (TOE 55728L200) transport bulk

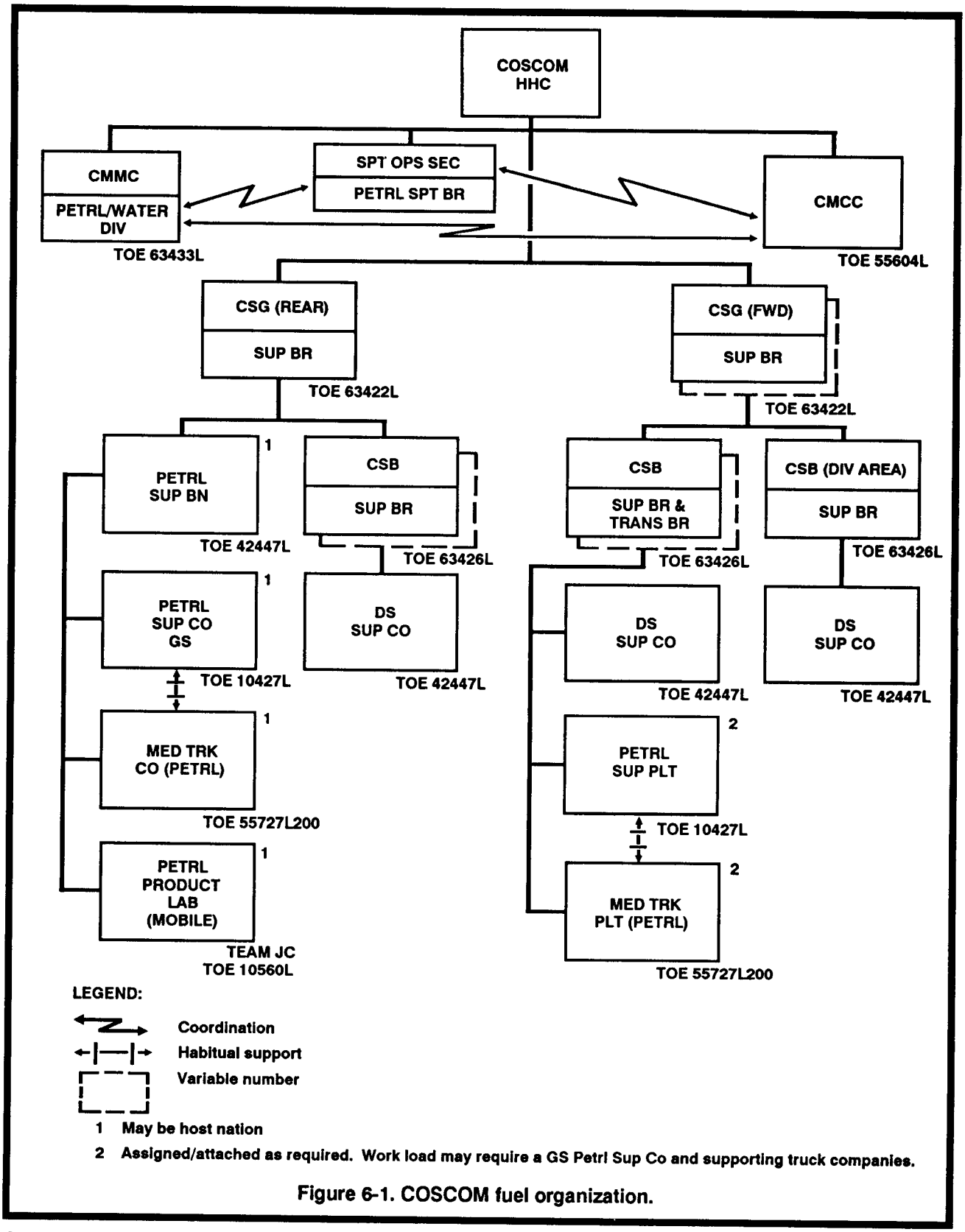

Figure 6-1. COSCOM fuel organization.

fuel in organic tankers from a GS petroleum supply company to DS supply companies. They throughput bulk fuel to the MSB's main Class III point in the DSA and FSB's forward Class III point in the BSA.

Petroleum Product Laboratory (Mobile)

Depending upon petroleum testing requirements and the intended use and criticality of fuel, the COSCOM attaches this team (TOE 1O56OLJC) to the rear CSG's petroleum supply battalion. The team tests petroleum samples and provides technical assistance on sampling fuels.

Petroleum Supply Cellular Logistics Team

Depending upon the theater of operation and national agreements, the COSCOM could attach this team (TOE 10560LS00) to a subordinate CSG. This CLT provides the liaison and interface between a WHNS petroleum supply battalion and the US petroleum distribution system. The CMMC forwards taskings to the WHNS petroleum supply battalion through this CLT.

The basis of allocation is one petroleum supply CLT per HN petroleum supply battalion. Though attached to a CSG HHC, it collocates with the HNS petroleum supply battalion. A quality surveillance specialists collocates with each WHNS petroleum supply company.

The WHNS petroleum supply battalion provides bulk petroleum storage and transportation in support of US forces within the corps rear area. WHNS petroleum supply companies can establish and operate a Class III supply point and bulk transfer sites.

The CLT coordinates the petroleum supply support provided by WHNS petroleum supply companies to US military units. It passes resupply data and prioritization from the CMMC to the WHNS petroleum battalion. Team personnel –

- Coordinate mission taskings and work load requirements received from the CMMC with the WHNS petroleum supply battalion.
- Coordinate the issue and shipment of petroleum products between HN petroleum supply companies and supported US units.
- Provide technical and procedural guidance to the HN petroleum supply battalion based on US quality control standards for storing, issuing, and transporting petroleum products.
- Forward petroleum forecasts from the WHNS petroleum supply battalion to the CMMC.
- Maintain petroleum stock visibility and provide status reports to the CMMC.
- Provide quality surveillance at HN petroleum supply companies.
- Provide interpretation services for US personnel visiting HN petroleum supply unit sites.

Pipeline and Terminal Operating Company

To support an independent corps, the TA commander can assign a pipeline and terminal operating company (TOE 10407L) to the COSCOM. The company can operate a tactical marine terminal, loading facilities, and fuel distribution pipelines.

SAMPLE BATTLEFIELD EMPLOYMENT

Figure 6-2 depicts how a COSCOM might employ its petroleum assets in support of a sample corps force.

At the direct support level, this COSCOM allocated a nondivision DS supply company to each CSG. Each company provides bulk fuel on an area support basis to supported nondivision units. As shown on Figure 6-2, a corps Class III supply point sets up near the division boundary. The supply point provides area support to nondivision forces in both the division sector and the forward CSG's AO behind the division boundary. It provides reinforcing or augmenting support to FSB/MSB Class III points to enable them to support corps forces in the brigade or division area.

In this example, the corps allocated two GS petroleum supply companies to the COSCOM. Faced with moderate rate of combat, the COSCOM's petroleum officer estimated that the committed heavy division required 500,000-gallons per day. At TOE Level 1, each petroleum supply platoon can receive, store, and issue over 600,000-gallons of bulk fuel per day.

Since a petroleum supply company consists of two petroleum supply platoons, the COSCOM allocated a platoon to each of its forward CSGs. The forward CSGs attached the petroleum supply platoon and supporting medium truck platoon (petroleum) to a subordinate CSB employed in the forward portion of the corps area. The COSCOM attached the other petroleum supply company and supporting medium truck companies (petroleum) to the rear CSG's petroleum supply battalion.

To move bulk fuels forward, the COSCOM allocated a medium truck company (petroleum) to each of its

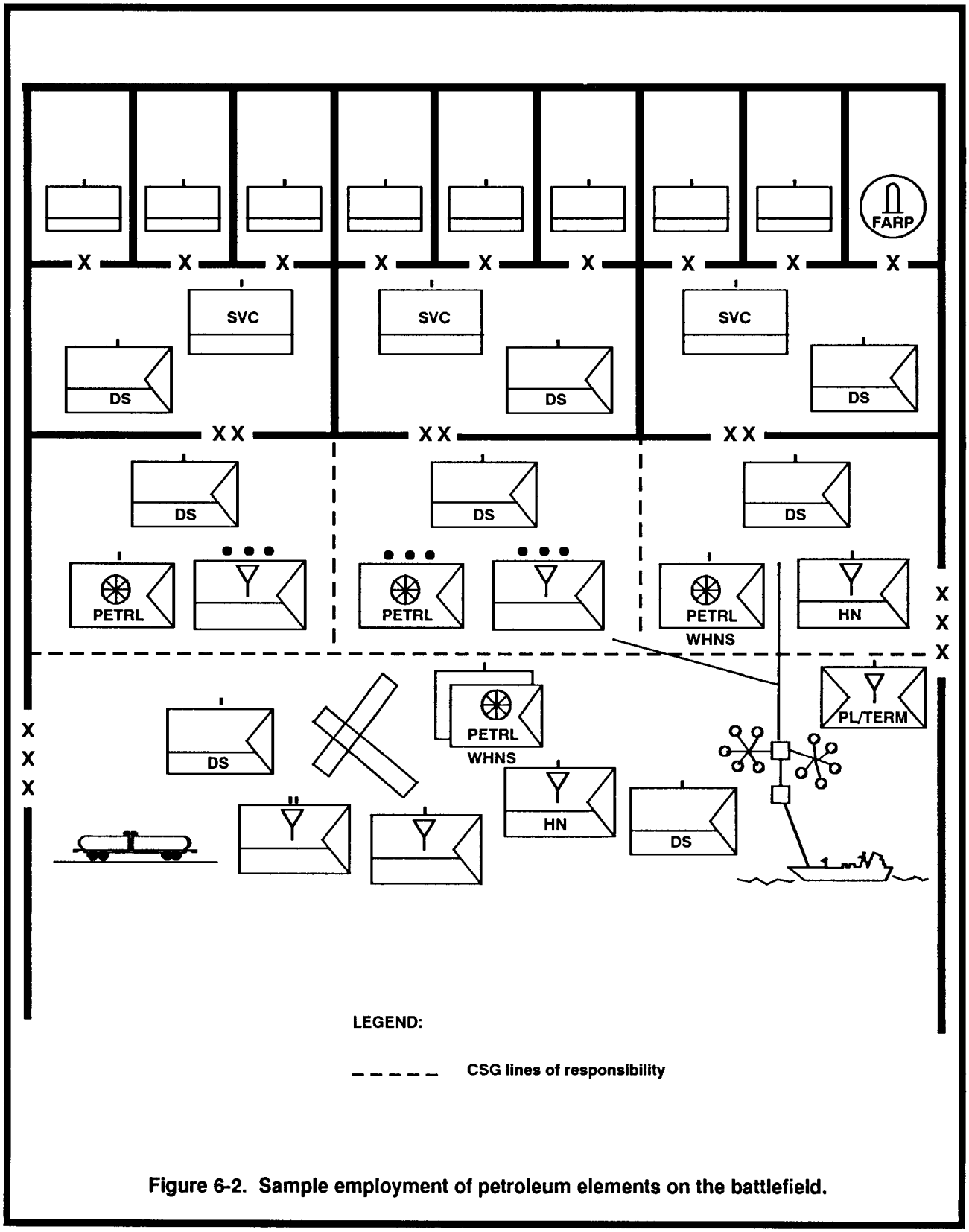

Figure 6-2. Sample employment of petroleum elements on the battlefield.

CSGs. These companies were further attached to a subordinate CSB or petroleum supply battalion. At TOE Level 1, with 75 percent availability of its authorized 5,000-gallon petroleum tankers, each medium truck company (petroleum) can transport approximately 450,000-gallons of fuel per day in two lifts.

The medium truck companies (petroleum) haul bulk fuel from the GS petroleum supply platoon/company to the MSB's main Class III supply point in the DSA. Based on METT-T and the tactical situation, they also haul fuel to the FSB's forward Class III points in the BSA.

Depending upon the existence of rail, the 7.5-10 mile assault hoseline authorized each of the petroleum supply companies may be used to move fuel from railheads to Class III supply points or from collapsible storage tanks to rail cars. The hoseline could also be used to move fuel to an airfield.

COSCOM FUEL DISTRIBUTION SYSTEMS

The fuel distribution system is an automatic resupply system based on fuel forecasts and status reports. It relies on the routine rapid push of bulk fuel, with distribution both lateral and forward.

HABITUAL SUPPORT REQUIREMENT

Bulk fuel distribution relies upon the habitual support relationship between GS petroleum supply companies and medium truck companies (petroleum). Assigning a petroleum supply platoon and an habitually supporting truck company to each forward CSG enables the CSGs to control the fuel distribution system, supporting daily operational requirements for bulk fuel in its area of responsibility.

When priorities warrant or maintenance and battle losses leave the petroleum supply units with insufficient truck tractor support, the COSCOM support operations officer directs that the CMCC reallocate tractors to petroleum supply units.

BULK FUEL DISTRIBUTION SYSTEM

Figure 6-3 depicts the bulk fuel distribution system. Requirements flow from DMMCs, BMMCs, RMMCs, and Class III supply points. S4s forecast requirements for the next 72-hour period. They base their forecasts on projected consumption data for the probable level of activity. The frequency of submitting forecasts varies, depending upon the intensity of operations.

CMMC petroleum/water division personnel compare bulk requirements against quantities available for issue. The COSCOM support operations officer directs that the CMMC adjust forecasted requirements based on his knowledge of corps issue priorities and tactical support requirements. As appropriate, the CMMC submits consolidated requirements to the TAMMC or JPO.

The theater army petroleum group ships bulk fuel, either by pipeline or bulk carriers, to the furthest points practicable in the corps. Medium truck companies (petroleum) transport fuel from tankage in the corps rear area to Class III supply points operated by petroleum supply companies and nondivision DS supply companies. The most responsive method of support is to throughput fuel from the petroleum supply company to the FSB's forward Class III supply point. To meet unexpected requirements, the CMMC diverts or reroutes fuel being transported from COMMZ stocks.

For the using unit, bulk fuel is distributed by supply point distribution. This means that supported units drive organic tank vehicles to their supporting DS level Class III supply point. However, if the using unit operates nearer the GS petroleum supply company, the COSCOM OPORD directs that the unit obtain fuel from the petroleum supply company.

Army aviation assets sling in 500-gallon drums to refuel helicopters close to the FLOT. This allows helicopters to stay on station longer in support of forward troops. An airdrop supply company prepares loads for delivery by fixed wing aircraft. As required, DS supply company personnel rig 55 and 500-gallon drums for helicopter external sling load.

For example, to support a cut-off M-1 tank company of 15 tanks by giving each a minimum of 300-gallons of fuel requires at least nine 500-gallon drums, delivered by at least two CH-47Ds. The tank company needs pumps, hoses, and fittings to get the fuel out of the drums. The planning and amount of equipment involved, plus the scarcity of available aircraft, make this type of support to ground vehicles strictly emergency type support.

When ground LOCs are not secure or available, or when the enemy or tactical situation cuts the unit off from normal resupply, emergency aerial resupply may be the only way to support operations. However, the Air Force only has a limited number of C-130s on hand which might be used to airdrop 500-gallon drums

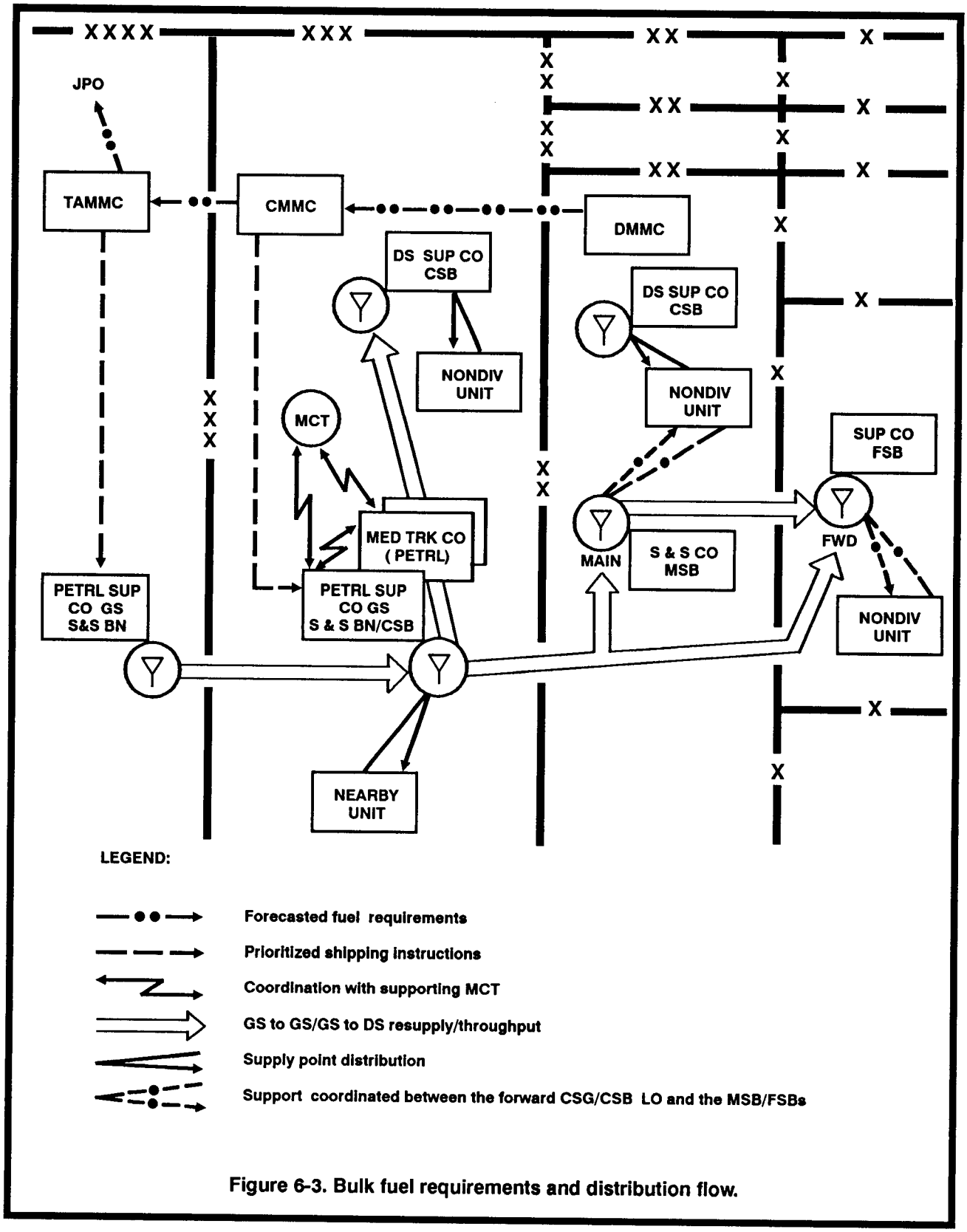

Figure 6-3. Bulk fuel requirements and distribution flow.

for quick turnaround. Even to support on an emergency basis requires extensive planning and coordination with the CMCC. Refer to FMs 55-10 and 100-27.

SINGLE BATTLEFIELD FUEL

In an effort to standardize fuels, DOD directed that overseas theaters convert to a single fuel with ground/air applications. The single fuel will replace JP-4 diesel fuel; and eventually, MOGAS. USAREUR uses JP-8. SOUTHCOM uses JP-5. CONUS units continue to use JP-4 and DF along with MOGAS.

Units deploying to overseas theaters need to coordinate with the overseas command to determine the fuel of choice in that AO. They might need to convert and redesignate organic DF ground equipment to agree with the fuel in use in the overseas theater. A change in fuel type results in an increase in filter consumption. Minor modifications may be needed to maximize the advantages of using JP-8 as the single fuel forward.

AVIATION FUEL DISTRIBUTION SYSTEM

Figure 6-4 depicts the distribution flow of aviation fuel. Aviation battalion S4s forecast requirements based on the expected duration of helicopter missions.

The petroleum supply company and its supporting medium truck company (petroleum) provide routine resupply of JP fuel forward to the aviation brigade organization. Approximately 95 percent of corps aviation brigade attack helicopters operate from the division area. Corps medium truck companies (petroleum) transport fuel to the attack/assault helicopter battalion combat trains. They also deliver fuel to the division airfield site, where medical evacuation helicopters normally refuel.

Corps aviation units use organic vehicles to pickup JP-4/JP-8 from the aviation brigade supply point. In an emergency, they obtain fuel from the MSB's main Class III point. The main Class III point maintains a small reserve supply of aviation fuel for emergencies or to position at forward fuel points.

PACKAGED PRODUCTS DISTRIBUTION SYSTEM

Requirements for packaged products depend on the number and type of equipment supported, climate conditions, and terrain. COSCOM petroleum support branch staff officers use SB 710-2 to determine requirements data for packaged products consumption during intense and sustained combat.

Units request packaged products in the same manner as they request Class II, IV, and VII supplies. They submit requests to their supporting DS supply company. If the requirement exceeds the available quantity, the DS supply company forwards a requisition to the CMMC. The CMMC then cuts an MRO directing the general supply company to issue packaged products to the DS supply company.

With the exception of fog oil, packaged products are distributed by supply point distribution. This means that units drive to their supporting DS supply company site to pickup packaged products. In contrast, corps trucks transport fog oil from the GS petroleum supply company to corps chemical units, bypassing the DS level.

MANAGING FUEL SUPPORT OPERATIONS

The COSCOM support operations officer is responsible for centralized control of bulk petroleum allocation and distribution within the corps. He determines allocation according to priorities set by the corps G3. The CMMC's petroleum and water division implements these priorities.

PETROLEUM SUPPORT BRANCH

COSCOM petroleum support branch personnel establish stockage requirements and distribution priorities. They keep the COSCOM support operations officer and CMMC petroleum and water division personnel informed of changes in petroleum stocks and distribution capabilities. Branch personnel compare petroleum requirements to capabilities and make recommendations on use of petroleum resources. They establish the frequency for submitting petroleum forecasts. They also establish procedures and standards for petroleum inspections. As required, they provide guidance on containment and cleanup of spills or leaks.

CMMC PETROLEUM AND WATER DIVSION

The CMMC's petroleum and water division performs integrated materiel management for bulk and packaged petroleum fuels, packaged petroleum products, containers and accessories, coal, and water. It consolidates requirements and performs centralized control of bulk petroleum distribution to the corps force. It reports distribution problems that deviate from the routine to the COSCOM petroleum support branch chief/COSCOM support operations officer.

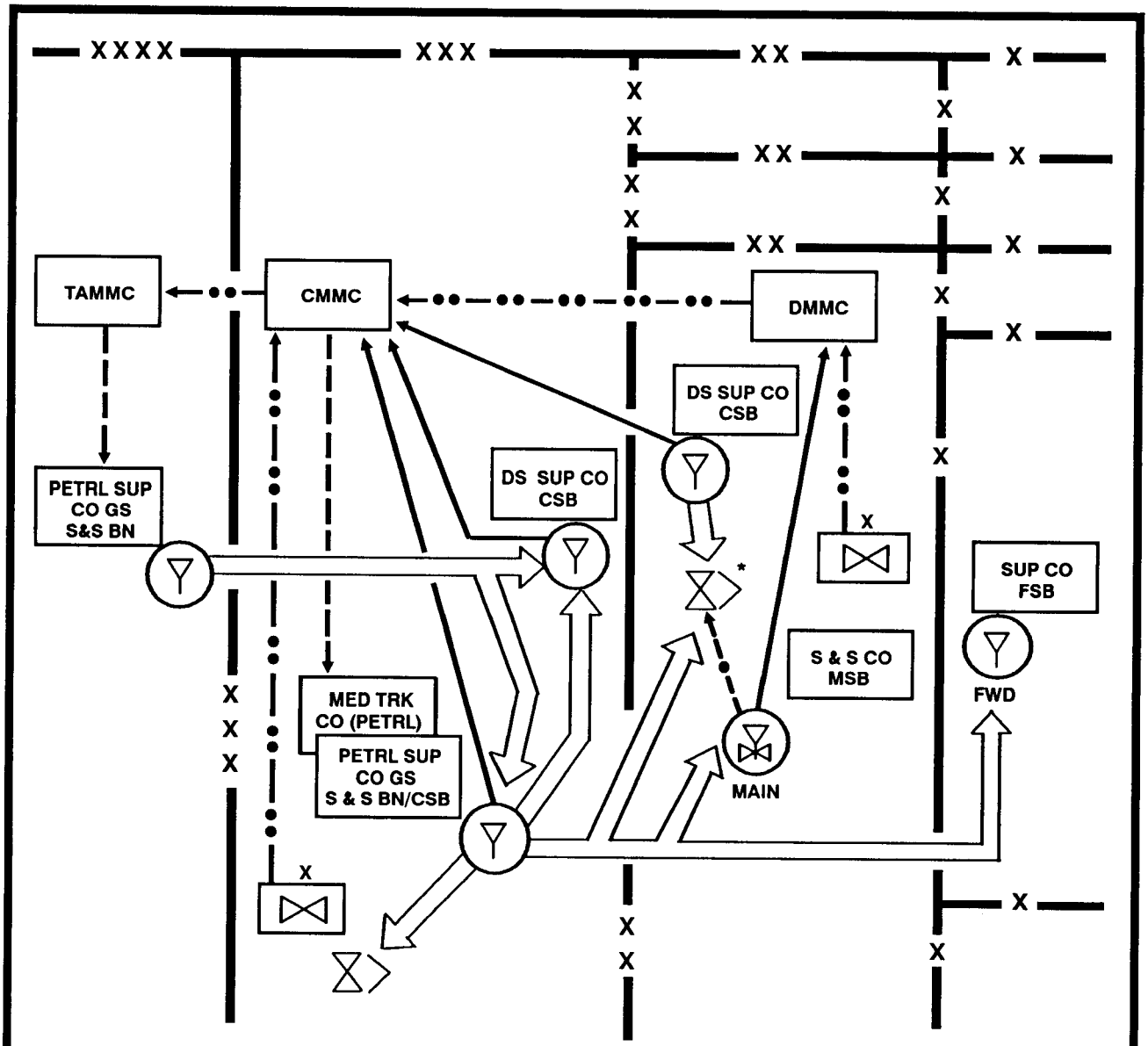

Figure 6-4. Aviation fuel requirements and distribution flow.

The CMMC petroleum branch manages the supply of petroleum fuels and products to the corps force. Branch personnel –

- Receive and coordinate requirements from DMMCs, BMMCs, RMMCs, and nondivision units.
- Consolidate requirements and submit totals to the TAMMC.
- Coordinate with the CMCC.
- Direct the issue of bulk petroleum stocks.
- Provide prioritized shipping instructions to the petroleum supply battalion and CSBs.
- Coordinate with the TAMMC (JPO for contingency corps) to meet unexpected requirements for bulk petroleum.
- Exercise surveillance over the availability and condition of petroleum handling and distribution support equipment.

FUEL ALLOCATION

When demands exceed availability, the TA commander establishes an allocation system. The COSCOM support operations officer receives allocation instructions from the corps G4. The CMMC's petroleum and water division implements those instructions.

SHORTFALLS

As appropriate, COSCOM petroleum support branch personnel recommend the steps in Table 6-1 to offset shortfalls in COSCOM fuel support capability.

Table 6-1. Ways to offset shortfalls.

EQUIPMENT SHORTFALLS
• **Cross-level equipment (tankers, collapsible tanks, 350 GPM pumps, tank and pump units, or assault hoselines).**
• **Revise maintenance priorities on fuel support equipment.**
• **Request support from TA or HN.**
DISTRIBUTION SHORTFALLS
• **Preposition fuel forward following a risk assessment.**
• **Distribute fuel in 55-gallon drums.**
• **Restrict unit distribution temporarily.**
• **Increase throughput.**
• **Implement fuel allocations.**
• **Change tankers from one fuel to another.**
• **Use assault hoseline or pipeline.**
• **Seek assistance from supported units.**
• **Request HNS.**
STORAGE SHORTFALLS
• **Keep equipment tanks full.**
• **Change containers from one fuel to another.**
• **Contract for HNS.**
• **Request use of HN fixed facilities**